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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/775,633	02/10/2004	Kevin Burak	226432	1325

23460 7590 10/30/2009

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ART UNIT	PAPER NUMBER
2473	

NOTIFICATION DATE	DELIVERY MODE
10/30/2009	ELECTRONIC

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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/775,633
Filing Date: February 10, 2004
Appellant(s): BURAK, KEVIN

Phillip M. Pippenger

For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed May 5, 2009 appealing from the Office action mailed June 26, 2008.

I. Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

II. Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

III. Status of the Claims

The statement of the status of claims contained in the brief is correct.

IV. Status of Amendments

No amendment after final has been filed.

V. Summary of the Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

VI. Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

VII. Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

VIII. Evidence Relied Upon

US 2002/0018442	Okada	Feb. 14, 2002
US 2002/0010792	Kalkunte et al.	Jan. 24, 2002
US 6,098,103	Dreyer et al.	Aug. 1, 2000

IX. Grounds of Rejection

DETAILED ACTION

Examiner's Forewords

In responding to previous Office Action of 7/12/2007, Applicant presented remarks/arguments with essentially no amendment to the claims (except claim 1 last line wherein the words “should be” were changed to “are”, which basically provides no concrete changes to the claim). Applicant’s remarks are fully considered and responses thereto are presented in Section 7, “Response to Arguments”.

After said full and careful consideration of Applicant's remarks/arguments, Examiner concludes to maintain the position of the previous Office Action. Therefore, the following sections (1 through 6) of art rejection are essentially the same as those of the previous Office Action except a few non-substantial word changes/corrections.

Applicant is therefore especially referred to the “Response to Arguments” section for Examiner's reasons of maintaining said position.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims **1, 2, 3**, 4 – 7 and 13 are rejected under 35 U.S.C. 102(e) as being anticipated by Okada (US 2002/0018442).

Okada discloses “a LAN path control system capable of easily changing active port of terminals” (Abstract lines 1-3) comprising the following features:

With respect to independent claims 1, 2 and 3

Examiner’s note: Okada’s system (fig. 3) has a plurality of terminals (fig. 3 items 301-312) each having “a main controller and two LAN controllers which have LAN communication ports (not shown) respectively” ([0050] lines 1-3 and also shown in fig. 3, e.g., “terminal 301” having “main cont. 321” and “LAN cont.0 322” and “LAN cont.1 323”). It is important to note that Okada’s teachings on “LAN controllers” are equivalent to “communication ports” since each LAN controller is directly coupled to a respective communication port as said hereinabove. For example, [0055] lines 6-8 recite “First and second MAC address areas are for registering the specific MAC addresses assigned to the LAN controllers 322 and 323 respectively”. It should be understood as specific MAC addresses assigned to the communication ports each LAN controller has, respectively. For another example, [0051] recites “*each of the LAN controllers is assigned with a specific media access control (MAC) address*”. It should be understood as each associated port being assigned a MAC address.

With above background information, below is a discussion of said claims for which Okada’s invention comprises:

Regarding claim 1, *an industrial network redundancy system* (see “a local area network path controlling system” recited [0013] line 2) *for providing communication redundancy between industrial network nodes* (see “which is capable of easy changing an active port of a terminal” recited [0013 lines 2-3) *comprising:*

at least two industrial network nodes (refer to fig. 3 and see “each of the terminals 301-312” recited [0050] line 1), *each having a plurality of network ports* (see “a terminal which is used in a local area network and capable of easy changing from an active port to a standby port thereof” recited [0014] lines 1-4) *to a switched network* (fig.

3 see the middle section for “0 transmission line” in block 361 and “1 transmission line” in block 362, each having various “HUB”, and see “plurality of hubs forming a simplex basic local area network” recited [0017] line 4);

a plurality of communication paths (fig. 3 depicting a plurality of paths between, e.g. terminal 301 and terminal 307 and see “it is therefore an object of this invention to provide a local area network path controlling system” recited [0013] lines 1-2) *between respective network ports of the at least two industrial nodes* (fig. 3 depicting two ports each terminal 301-312 and each port having its respective path, and fig. 4 showing detailed structure of a terminal having “LAN. CONT.0 [LAN controller 0] 322” associated with a port and “LAN.CONT.1 323” with another port), *wherein the plurality of communication paths comprises the switched network* (fig. 3 noting that said paths connecting to said “HUBs” in “0/1 transmission line” blocks “forming a simplex basic local area network” recited [0017] line 4); *and*

a respective data link protocol layer residing on each of the at least two industrial network nodes (see “each of the terminals has first and second local area network controllers and assigned with specific internet protocol address” recited [0017] lines 5-7) *for determining which of the plurality of communication paths to utilize for outgoing communications* (***1:*** refer to fig. 4 showing a “CPU 401” and see “CPU401 to control the whole of the terminal 301. The [a] program makes the CPU 401 serve as an equipment illustrated in fig. 7” recited [0057] lines 2-4. ***2:*** refer to fig. 7 and see “A first failure detecting portion 704 detects a link failure between the active controller 322 and the hub connected to the active controller. A changing porting 705 changes the active controller

from the LAN controller 322 to the LAN controller 323" recited [0058] lines 14-19) *and for determining to which port of the other of the at least two industrial network nodes such communications are addressed* (see "when the CPU 401 receives the normal reply, it abstracts the source IP address and the source MAC address from the received normal reply" recited [0070] lines 1-3 and "Thus the terminal 301 has the specific IP addresses and the MAC addresses of the other terminals which are put in operation in the destination information table 412. The terminal 301 can communicate with the other terminals by the use of the specific IP addresses and the MAC addresses registered in the destination information table 412" recited [0071] lines 1-3. Also refer to fig. 4 to see said "destination information table 412" as well as an "own terminal information table 413").

Regarding claim 2, *an industrial network redundancy system* (see "a local area network path controlling system" recited [0013] line 2) *for providing communication redundancy* (see "which is capable of easy changing an active port of a terminal" recited [0013 lines 2-3) *between a first industrial network node* (see fig. 3, e.g. "terminal 301") *and a plurality of second industrial network nodes* (see fig. 3, e.g. "terminal 302-312") *comprising:*

the first industrial network node (fig. 3 e.g. "terminal 301") *and the plurality of second industrial network nodes* (fig. 3, e.g. "terminal 302-312"), *each having a plurality of network ports* (see "a terminal which is used in a local area network and capable of easy changing from an active port to a standby port thereof" recited [0014] lines 1-4) *to a switched network* (fig. 3 see the middle section for "0 transmission line" in block 361

and “1 transmission line” in block 362, each having various “HUB”, and see “plurality of hubs forming a simplex basic local area network” recited [0017] line 4);

a plurality of communication paths (fig. 3 depicting a plurality of paths between, e.g. terminal 301 and all other terminals 302-312 and see “it is therefore an object of this invention to provide a local area network path controlling system” recited [0013] lines 1-2) *between respective network ports of the first industrial node and each of the plurality of second industrial network nodes* (fig. 3 depicting two ports each terminal 301-312 and each port having its respective path, and fig. 4 showing detailed structure of a terminal having “LAN. CONT.0 [LAN controller 0] 322” associated with a port and “LAN.CONT.1 323” with another port), *all of the plurality of communication paths comprising the switched network* (fig. 3 noting that said paths connecting to said “HUBs” in “0/1 transmission line” blocks “forming a simplex basic local area network” recited [0017] line 4); *and*

a respective data link protocol layer residing on the first industrial network node and each of the plurality of second industrial network nodes (see “each of the terminals has first and second local area network controllers and assigned with specific internet protocol address” recited [0017] lines 5-7) *wherein the plurality of communication paths are switched base on detection of a fault in connectivity between nodes* (***1:*** refer to fig. 4 showing a “CPU 401” and see “CPU401 to control the whole of the terminal 301. The [a] program makes the CPU 401 serve as an equipment illustrated in fig. 7” recited [0057] lines 2-4. ***2:*** refer to fig. 7 and see “A first failure detecting portion 704 detects a link failure between the active controller 322 and the hub connected to the active controller.

A changing porting 705 changes the active controller from the LAN controller 322 to the LAN controller 323" recited [0058] lines 14-19) *and for determining to which port of the other of the at least two industrial network nodes such communications should be addressed* (see "when the CPU 401 receives the normal reply, it abstracts the source IP address and the source MAC address from the received normal reply" recited [0070] lines 1-3 and "Thus the terminal 301 has the specific IP addresses and the MAC addresses of the other terminals which are put in operation in the destination information table 412. The terminal 301 can communicate with the other terminals by the use of the specific IP addresses and the MAC addresses registered in the destination information table 412" recited [0071] lines 1-3. Also refer to fig. 4 to see said "destination information table 412" as well as a "own terminal information table 413").

Regarding claim 3, *an industrial network node* (see "it is another object of this invention to provide a terminal" recited [0014] lines 1-2) *comprising:*

a plurality of network ports (see "a terminal which is used in a local area network and capable of easy changing from an active port to a standby port thereof" recited [0014] lines 2-4) *connected to a single switched network* (see fig. 3, e.g. "terminal 301" with "LAN cont. 0 322" [port 0] and "LAN cont.1 323" [port 1] both connected to a "plurality of hubs forming a simplex basic local area network" recited [0017] line 4), *wherein a second industrial network node* (fig. 3 see, e.g. "terminal 307") *is also connected to the switched network* (fig. 3 showing "terminal 307" connected to the same network "terminal 301" connected to); *and*

a data link protocol layer transparently usable by higher layers of a protocol stack (see fig. 5 depicting higher layer protocol stacks, e.g. “terminal IP address” “CH IP address” on top of lower data link protocol layer protocol “MAC address (LAN cont.0)” and “MAC address (LAN cont.1)”) *to facilitate network communications to the second industrial network node* (see “Each of the terminals is assigned with a specific internet protocol (IP) address. Furthermore, each of the LAN controllers is assigned with a specific media access control (MAC) address. In other words, each terminal has one of the specific IP address and two of the MAC addresses” recited [0051]),*the data link protocol layer being adapted to determine which of the plurality of network ports to use to transmit a communication to the second industrial network node* (***1:*** refer to fig. 4 showing a “CPU 401” and see “CPU401 to control the whole of the terminal 301. The [a] program makes the CPU 401 serve as an equipment illustrated in fig. 7” recited [0057] lines 2-4. ***2:*** refer to fig. 7 and see “A first failure detecting portion 704 detects a link failure between the active controller 322 and the hub connected to the active controller. A changing porting 705 changes the active controller from the LAN controller 322 to the LAN controller 323” recited [0058] lines 14-19), *and to forward communication received on any of the plurality of network ports* (see “when the CPU 401 receives the normal reply, it abstracts the source IP address and the source MAC address from the received normal reply” recited [0070] lines 1-3 and “Thus the terminal 301 has the specific IP addresses and the MAC addresses of the other terminals which are put in operation in the destination information table 412. The terminal 301 can communicate with the other terminals by the use of the specific IP addresses and the MAC addresses registered in

the destination information table 412" recited [0071] lines 1-3. Also refer to fig. 4 to see said "destination information table 412" as well as a "own terminal information table 413").

With respect to dependent claims

Regarding claims 4 and 5, *each industrial network node comprises a communication end-station* (claim 4) and *the communication end-station is selected from the group consisting of a computer, a field module, and a control module* (claim 5) (refer to fig. 3 and see "Each of the **terminals** 301-312 has a main **controller** and two LAN **controllers**." recited [0050] line 1).

Regarding claim 6, *wherein the higher protocol stack layers above the data link layer include an IP layer* (see "each terminal has one of the specific IP address and two of the MAC addresses" recited [0051] line 4-5 on page 5 left col., and see also fig. 5 depicting higher layer protocol stacks, e.g. "terminal IP address" "CH IP address" on top of lower data link protocol layer protocol "MAC address (LAN cont.0)" and "MAC address (LAN cont.1)").

Regarding claim 7, *wherein the higher protocol stack layers above the data link layer include an application layer* (it is well known in the art that networks are constructed for practical uses wherein each and every node is set to perform certain applications or functions for which application layer has to be added on top of all other layers; or otherwise the network will be idling. For teachings of network application layer, see, for example, Fred Halsall, "Computer Networking and the Internet", Fifth Edition, ISBN 0-321-26358-8, p83 "1.5 Protocol stacks" and p84 figure 1.38 (b)

depicting “Application layer protocol(s)” on top of “Network protocol IP” and “Link layer protocol”)

Regarding claim 13, *transmitting a broadcast packet from the first node via the alternate port to inform network switches of the MAC address of the alternate port* (see “a first broadcasting portion is for broadcasting an address notification formed on the basis of registrations of the first table onto the simplex basic local area network when starting is carried out” recited [0018] lines 6-9, and further see fig. 5, showing “a format of an own terminal information table” recited [0025] lines 1-2, wherein shown are “MAC address (LAN CONT.0)” [active port] and “MAC address (LAN CONT.1)” [standby port]).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims **11**, 12, 14, 16 –18 are rejected under 35 U.S.C. 103(a) as being unpatentable over a first embodiment of Okada (US 2002/0018422) in view of a second embodiment of Okada.

Okada discloses, in a first embodiment, “a local area network (LAN) path control system according a preferred embodiment” ([0047] lines 2-3) comprising the following features:

Regarding claim 11, *a method of providing network communication redundancy between a first and second node* (see “It is still another object of this invention to provide a method of controlling a local area network path which is capable of way changing an active port of a terminal” recited [0015]), *the first and second node* (fig. 3, e.g. “terminal 301” as a *first node* and “terminal 307” as a *second node*) *each having at least two physical network ports* (see “Each of the terminals 301-312 has a main controller and two LAN controllers which have LAN communication ports (not shown) respectively” recited [0050] lines 1-3, and also shown in fig. 3, e.g., “terminal 301” having “main cont. 321” and “LAN cont.0 322” and “LAN cont.1 323”), *wherein for each node, one physical port is a primary port* (see “Either of the first local area network controller or the second local area network controller is put in service and serves as an active controller” recited [0017] lines 12-14) *associate with a primary communications stack and the other physical port is an alternate port* (see “The first specific media access control address is used for an active media access control address when the first local area network controller is the active controller” recited [0017] lines 14-17) *and the other physical port is an alternate port* (refer to fig. 3 and see “the LAN controller 323 is the standby controller when the LAN controller 322 is the active controller” recited [0058], starting first line on p5 left col., lines 33-35 on the right col.), *the method comprising:*

determining at the first node that a communication fault has occurred on that node’s primary port (refer to fig. 7, depicting a program that “makes the CPU 401 serve as an equipment” recited [0057] lines 3-4 and “for the CPU 401 to control the while of

the terminal 301" recited [0057] lines 2-3 wherein "CPU 401" is depicted in fig. 4 running "terminal 301", and see "a first failure detecting porting 704 detects a link failure between the active controller 322 [see fig. 4] and the hub connected to the active controller" recited [0058] lines 14-19 on p5 right col.);

forwarding further outgoing network communications associated with the primary communications stack from the alternate port of the first node (refer to fig. 7 and see "a changing portion 705 changes the active controller from the LAN controller 322 to the LAN controller 323 (or the LAN controller 323 to the LAN controller 322) [depending which is the original active controller]" recited [0058] 17-20 on p5 right col.)

Said first embodiment of Okada does not expressly disclose (although it would have been an obvious feature of the first embodiment) the following features:

unbinding the primary communications stack from the primary port at the first node transparently to communications stack layers above a data link layer;

binding the primary communications stack to the alternate port at the first node transparently to communications stack layers above the data link layer.

Okada also discloses, in a second embodiment, "another related LAN path control system" ([0047] lines 2-3) wherein (see fig. 2) "the host computer 210 is connected to both of the communications adapters 230 and 232 while the host computer 220 is connected to the communications adapters 240. Both of the communications adapters 230 and 232 are connected to the communications adapter 240 through a network 250" ([0037] lines 3-8) and "the host compters 210 and 220 are assigned with IP addresses IP=A and IP=B, respectively. The communications adapters

230, 232 and 240 are assigned with MAC addresses MAC=a, MAC=c and MAC=b, respectively" ([0038]) comprising the following features:

unbinding the primary communications stack from the primary port at the first node transparently to communications stack layers above a data link layer;

binding the primary communications stack to the alternate port at the first node transparently to communications stack layers above the data link layer.

(see "when the failure of the communication adapter 230 is detected, the host computer 210 decides to assign the work of the communications adapter 230 to the communications adapter 232. Then the host computer commands the communication adapter 232 to operate" recited [0040])

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system in the first embodiment of Okada by adding the features of the second embodiment of Okada to the first embodiment in order to provide a smoother operation node which minimizes data loss. Note that this feature, to one skilled in the art, should have been in fact implied even in the first embodiment of Okada even though Okada has no express teaching therein.

Regarding dependent claims

Okada's first embodiment discloses the following features:

Regarding claim 12, *wherein each physical network port of the first node has a distinct network and MAC address within the switched network* (see "furthermore, each of the LAN controller is assigned with a specific media access control (MAC) address" recited [0051] line 2 on p4 right col. line 3 on p5 left col. line 1)

Regarding claim 14, *wherein the primary port and alternate port of the first node are connected to the switched network via different network switches* (see “The first local area network controller is directly connected to one of the hubs … The second local area network controller is directly connected to another one of the hubs” recited [0017 lines 8-12).

Regarding claim 16, *wherein the first and second nodes are each of a type selected from the group consisting of a computer, a field module, and a control module* (see “Each of the **terminals** 301-312 has a main **controller** and two LAN **controllers**.” recited [0050] line 1).

Regarding claim 17, *wherein the communications stack layers above the data link layer include an IP layer* (see “each terminal has one of the specific IP address and two of the MAC addresses” recited [0051] line 4-5 on page 5 left col., and see also fig. 5 depicting higher layer protocol stacks, e.g. “terminal IP address” “CH IP address” on top of lower data link protocol layer protocol “MAC address (LAN cont.0)” and “MAC address (LAN cont.1)”).

Regarding claim 18, *wherein the higher protocol stack layers above the data link layer include an application layer* (it is well known in the art that networks are constructed for practical uses wherein each and every node is set to perform certain applications or functions for which application layer has to be added on top of all other layers; or otherwise the network will be idling. For teachings of network application layer, see, for example, Fred Halsall, “Computer Networking and the Internet”, Fifth Edition, ISBN 0-321-26358-8, p83 “1.5 Protocol stacks” and p84 figure 1.38 (b)

depicting “Application layer protocol(s)” on top of “Network protocol IP” and “Link layer protocol”).

5. Claims 8, 10, 15 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okada in view of Kalkunte et al (US 2002/0010791, Kalkunte hereinafter).

Okada discloses claimed limitations in sections 2 and 4 above. Okada does not disclose the following features:

Regarding claims 8 and 19, *wherein the switched network further comprises at least one IEEE 802.1d compliant bridge.*

Regarding claims 10 and 15, *wherein the plurality of network ports conform to an IEEE 802.3 aggregation standard.*

Kalkunte discloses “trunking and mirroring across stacked gigabit switches” (p1 left col. lines 1-2) comprising the following features:

Regarding claims 8 and 19, *wherein the switched network further comprises at least one IEEE 802.1d compliant bridge* (see “When the packet comes in from the ingress port the decision to accept the frame for learning and forwarding is done based on several ingress rules. These ingress rules are based on the Protocols and Filtering Mechanisms supported in the switch. The protocols which decide these rules are 802.1d (Spanning Tree Protocol), 802.1p and 802.1q” recited [0091] line 1, left col., to line 6, right col.).

Regarding claims 10 and 15, *wherein the plurality of network ports conform to an IEEE 802.3 aggregation standard* (see “Check if the packet is an IP packet (check

for Ethernet V2 type, 802.3, tagged Ethernet V2 and Tagged 802.3 types of Packets)" recited [0210] lines 1-3).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system and method of Okada by adding the Ethernet 802.1d and 802.3 features used by Kalkunte to Okada in order to provide faster and more efficient system wherein "bridges [can] typically utilize what is known as the 'spanning tree' algorithm to eliminate potential data loops" as pointed out by Kalkunte ([0008] lines 13-15).

6. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Okada in view of Dreyer et al (US 6,098,103, Dreyer hereinafter).

Okada discloses claimed limitations in sections 2 and 4 above. Okada further discloses:

Regarding claim 9, *determining which of the plurality of network ports to use to transmit a communication to the second industrial network node, the data link protocol layer employs an alternate port based on physical link status information received from its ports and end-to-end connectivity status received* (refer to fig. 7 and see "a second failure detecting portion 708 transmits a local area network check signal from a standby controller to the active controller through the simplex based local area network to detect a failure between two hubs 351 and 353" recited [0058] lines 29-33).

Okada does not disclose, <u>regarding claim 9</u>, connectivity status received *from a reliable Logical Link Control (LLC) Type 2 or 3.*

Dreyer discloses “automatic MAC control frame generating apparatus for LAN flow control” (col. 1 lines 1-3) comprising:

Regarding claim 9, connectivity status received *from a reliable Logical Link Control (LLC) Type 2 or 3* (see “MA_DATA.request primitive is generated in accordance with IEEE 802.3x clause 2.3.1.3 by the MAC client entity whenever data shall be transferred to a peer entity or entities. This can be in response to a request from higher protocol layers or from data data generated internally to the MAC client, such as required by Type 2 LLC service” recited col. 6 lines 27-32).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system/method of Okada by adding LLC Type 2 feature of Dreyer to Okada in order to provide an improved flow control mechanism with “enhanced speed, throughput and interoperability over this basic flow control system while maintaining full compatibility with the IEEE standard” as pointed out by Dreyer (col. 7 lines 60-63).

X. Response to Arguments

Note: The Appellant’s Appeal Brief appears to have the page numbers (at bottom of each page) missing due to, probably, file transmission. Therefore, the Examiner has to, when referring to pages, refer to relevant pages by citing “page starting with *xxx* ending with *yyy*” wherein *xxx* indicates the leading word(s) of the page and *yyy* indicates the ending word(s) of the page.

X.1: Discussion of the Cited Art (last paragraph of page starting with *Id.* ending with *indicating the*, continuing into first paragraph of page starting with *presence of* ending with *2002/0018442*).

Appellant provided a brief discussion of the cited art of Okada (US 2002/0018442, Okada hereinafter), which brief discussion appears to be relevant to the issues being appealed for.

X.2: Claim 1 (page starting with *Id.* ending with *indicating the*, continuing into page starting with *presence of* ending with *2002/0018442*).

Appellant's argument is directed to the limitation of "<u>switched</u> network" (emphasis added) in Claim 1, alleging that Okada failed to teach this limitation.

<u>Issue 1: switched network vs. collision detection network</u>

Appellant argues "there can be no doubt that when the claims use the term 'switched network,' they are expressly referring to what one of skill in the art would actually consider to be a switched network", while "Okada does not pertain to switched networks. Rather the networks of Okada are clearly traditional ***collision detection networks***" (emphasis original).

The Examiner respectfully disagrees. Firstly, the broadly claimed "switched network" (more will be discussed later) with no further limitation in the claim is taken as a network that provides switching functionalities for routing data from point A to point B via certain network path(s). Secondly, the Examiner failed to see where in Okada it is stated that the networks thereof are "collision detection networks". Thirdly, even Okada were "collision detection networks", it does not suggest that they would not be "switched networks" as well; in fact, as will be discussed below, Okada provides "switched

networks" that provide precisely the same switching functionalities as Appellant claimed for routing data from for example, see Fig. 1, "terminal 301" to "terminal 307" and vice versa, reading exactly on each and every limitation in claim 1, such as "*a plurality of communications paths between respective network ports of the at least two industrial nodes, wherein the plurality of communication paths comprise the switched network; and ... determining which of the plurality of communications paths to utilize for outgoing communications and for determining to which port of the other of the at least two industrial network nodes such communications are addressed.*"

Referring to Okada's Fig. 3, it is clearly shown that node 301 has LAN controllers (ports) 322 and 323 communicating with node 307's LAN controllers (ports) 332 and 333, respectively, via different paths/links, e.g., LAN controller 322 → hubs 351, 355 → LAN controller 332 ("Path 1" hereinafter for the convenience of later discussion) and LAN controller 323 → hubs 353, 354, 358, 357 → LAN controller 333 ("Path 2" hereinafter). Determining, selecting or *switching* of the two different paths/links and associated ports is done when either of the "LAN controller-hub failure detection section" (used to detect link/port failures between a node and the hub connected thereto) or the "hub-to-hub failure detecting section" (used to detect failures in hubs and/or the links thereinbetween) detects a fault. For example, if anything is detected wrong with Path 1, such link breakdown, hub malfunction etc., Okada will determine/select, or switch to use "Path 2". All of these are clearly self explanatory by merely examining Fig. 3 and Okada in fact provides the details throughout his specification, certain relevant sections of which are applied to the claimed features as discussed above in relevant sections of the final Office Action.

Further, the Appellant, in an effort to support above cited argument on "switched network", provided "This [switched network – Examiner notes] aspect of the invention can be seen, for example, in Figure 1 of the present application with respect to switches 121, 123, 125, and 127", attempting to suggest that Okada failed to provide such structure.

Examiner respectfully disagrees. Firstly, the Figure 1 structure the Appellant points to <u>is not</u> what is being claimed in claim 1. Secondly, even if we take the Figure 1 structure as what is being implied (again, it is <u>not</u>), Okada provided precisely the same. Appellant is invited to review Okada's Fig. 3 by turning it 90 degrees counterclockwise and comparing it with Appellant's Figure 1. It is crystal clear that the following one-to-one mappings exist (from left to right of the two figures being compared):

Appellant	**Okada**
node 103	terminal 301
ports 109/111 (of node 103)	ports 322/323 (of terminal 301)
switches 123/121	hubs 351/353
redundant network	hub-hub failure detecting section
switches 127/125	hubs 355/357
ports 117/119 (of node 107)	ports 332/333 (of terminal 307)
node 107	terminal 307

With above structurally one-to-one mappings as well as the teachings as discussed in the final Office Action in terms of how different ports/paths are determined or *switched* in the same fashion by Okada as that by the Appellant in the various Independent claims including claim 1, there is no doubt that Okada provided not only the same port/path determining/*switching* as claimed but also the same system structure <u>even as described</u> in Appellant's Figure 1 that the Appellant referred to for supporting his argument.

Furthermore, the Appellant, also in an effort to support above cited argument on "switched network", "the specification also defines the term 'switched network' consistent with the

know definition of this well-known term of art, as being distinct from collision domain networks, and allowing for simultaneous switching of packets between the switch's ports (See paras. [0003]-0004])", suggesting, as appeared to be, the Okada is "collision domain network" not "allowing for simultaneous switching of packets between the switch's ports".

Examiner respectfully disagrees. Firstly and once more, said "distinct from collision domain networks" is not a claimed feature, nor is "simultaneous switching of packets between the switch's ports". Secondly, as already pointed out above, there is no teaching in Okada that the network thereof is a "collision domain network" and more important even a "collision domain network" does not suggest it's not a "switched network". Thirdly, Okada has clearly demonstrated "simultaneous switching of packets between the switch's ports" as above discussed switching between "Path 1" and "Path 2" involving *simultaneous switching* of multiple hubs and thus necessarily the *ports* thereof.

Issue 2: switched network vs. ring/simplex network

On page starting with *presence of* ending with *2002/0018442* regarding claim 1, the Appellant states: "Okada at paragraph [0049]: 'the hubs 351-358 are connected in a **ring** to form a simplex basic local area network with a ring structure. The hubs 351-358 are classified into first and second groups to raise reliability [sic] of the simplex basic local area network.' (emphasis added) Thus, groups 361 and 362 are ring sub-networks, not switched networks" (emphasis original).

Again, Examiner respectfully disagrees. Firstly, the broadly claimed "switched network" has no limitation whatsoever to exclude a ring based network. Secondly, as well known in the art, even a ring based network comprises switched network for switching data paths between different rings and/or directions, especially when one path

(ring) faults; therefore, by merely alleging Okada providing a “ring” based network says nothing about it not being a switched network and, as repeatedly stated above, Okada has provided exactly the same system structure even as Appellant's described in Figure 1 as well as the path/port determination as claimed. Fourthly, it is also an irrelevant allegation of Okada’s providing a “simplex” network because what is relevant is whether Okada provided a “switched network” with a “simplex” structure, which, again, as repeated demonstrated and extensively discussed in the final Office Action, provides exactly the same functionality of the broadly claimed “switched network”, which claim provided nothing further, either positively or negatively, regarding its functionality of determining/switching paths/ports of the communication nodes different than that of Okada. Furthermore, the Examiner would like to draw the Appellant's attention to what is recited above that Okada's network, as Appellant correctly identified, is to “raise reliability of the simplex basic area network”. It is exactly this “raise reliability” that provided the exactly the same functionality of Appellant’s claimed “switched network” and makes Okada different from prior art network that does not have “raise[d] reliability”. Again, Appellant is respectfully invited to review the structure of Okada’s Fig. 3 in view of Appellant’s Figure 1 and the detailed discussion above as well as the mappings provided in final Office Action for the claimed limitations to appreciate the one-to-one reading of Okada on Appellant's claimed features.

Along the same line of argument, Appellant provided final remarks for claim 1 regarding Okada’s “simplex” nature by saying “a switched network is <u>generally</u> full duplex, not

simplex (one-way half-duplex) or even two-way half-duplex. Thus Okada's description of channels as 'simplex' indicates conclusively that the Okada networks are <u>not</u> switched." (Emphasis original).

Again, the Examiner respectfully disagrees by simply pointing out that Okada's "raise reliability", as Appellant's correctly identified above, and the way of doing so provided exactly that his "networks <u>are</u> switched" as, once again, repeatedly discussed above as well as in the final Office Action. Or in other words, using Appellant's language and admitted teachings of Okada, "Okada's description of channels as '<u>raise[d] reliability</u>' 'simplex' indicates conclusively that the Okada networks <u>are</u> switched" (emphasis added).

X.3: Claim 2 (page starting with *presence* ending with *2002/0018442*).

X.4: Claim 3 (last paragraph of the same page of Claim 2 continuing into page starting with *Claim 3* ending with *principles*).

X.5: Claim 11 (page starting *Claim 3* ending with *principles*).

All of the arguments for these claims are drawn to "switched network" as well and simply briefly summarized what was being argued for Claim 1 above. Therefore, by addressing the arguments for Claim 1 in subsection X.2 above, the Examiner has addressed all of the arguments for Claims 2, 3 and 11 as well.

X. 6: Conclusion (last paragraph of same page as for Claim 11 continuing into page starting with *As such* ending with *(facsimile)*)

The Appellant's conclusive statement in this subsection is believed to have been fully addressed in the discussions hereinabove.

XI. Evidence Appendix

None

XII. Related Proceedings Appendix

None

CONCLUSION

Based on aforesaid reasons/answers, it is believed that the rejections should be sustained.

Respectfully submitted,

/Andrew Lai/
Examiner, Art Unit 2473
October 19, 2009

/KWANG B. YAO/

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